

REMARKS**Claims**

Claims 1-18 are pending in the case at the time of the Office Action. No claims are amended or cancelled.

Priority Based on Provisional Application

The applicants note that the Examiner has acknowledged the priority claim made on provisional application Ser. No. 60/257,243, filed December 20, 2000.

Section 103 rejections

Claims 1-18 are rejected as being obvious over a combination of applicant's admissions, US Patent 5,705,564 to Liang ("Liang '564") and US Patent 6,027,557 to Hayner ("Hayner '557"). Applicants traverse the rejection.

The proper analysis for an obviousness rejection is to set out the content of the prior art patents, to point out the differences in the art as a whole and to determine why it would be obvious to one of ordinary skill to be motivated to make the combination of the references.

With respect to the Examiner's determination of "admissions" by the applicants, the applicants agree that use of polymer-modified bitumen in a roofing membrane with a fibrous core, a granular top surface and an anti-stick bottom is known in the art. The assignee of the entire interest in this application has indeed produced such roofing membranes for long more than twelve months prior to either this application or the provisional application upon which it depends.

With respect to Liang '564, the Examiner states that Liang '564 discloses the mixing of a polymer modifier with bitumen under vacuum in order to remove air and to prevent decomposition of the modifier, citing Col. 9, lines 20-25 and Col. 10, lines 25-35 and 45-50. Applicants do not agree totally with this characterization. To be specific, Col. 9, lines 20-25 seem to indicate the use of vacuum to be equivalent to the use of an inert gas, which is different than what is taught or claimed by the applicants. Further, the desire to use the vacuum or the inert gases is entirely different than taught by the applicants. Specifically, Col. 10, lines 25-45 teach that the vacuum or inert gas is used to allow a polymer such as a polybutadiene to be dispersed at a higher temperature than can be achieved under air pressure, due to the

instability of the polybutadienes at those temperatures in the presence of air. Applicant does not contest the teaching of Liang '564 at Col. 10, lines 45-50, that a stabilized polymer-modified bitumen has use in roofing membranes. It is important to note that Liang '564 applies to the dispersion of an insoluble polyolefin phase in a continuous bitumen phase such that the disperse polyolefin phase is resistant to phase separation. This is what Liang means by the term "stabilized." The modifiers taught and claimed in the present invention are distinctly different than those described and claimed in Liang '564. Further, Liang '564 does not suggest that the modifiers of the present invention are part of that teaching. At Col. 1, lines 32-42, Liang '564 mentions prior art usage of "bitumens modified with a copolymer of styrene and a conjugated diene and a coupling agent, such as sulfur," which is certainly a proper characterization of the SBS modifier described in the present invention.

With respect to Hayner '557, the Examiner states that the reference teaches the use of SBS, SIS, SEBS and SB, either alone or in mixtures to modify bitumen. Actually, the specific modifiers taught by the applicants are admitted in the specification as being known modifiers. See paragraphs [0002] and [0017], for example. More importantly, Hayner '557 teaches away from the teaching of Liang '564, in that it recommends blowing air into the molten bitumen (See Fig. 1, and Col.13, lines 30-39) and also recommends that the process be carried out at a pressure greater than atmospheric, rather than under a vacuum (Col. 8, lines 6-8). If anything, Hayner '557 teaches and encourages use of a process that is exactly antithetical to the present invention. The Hayner '557 process would almost certainly result in a greater entrainment of air or gas into the bitumen product, rather than a reduced amount as required by claim 1. With the Examiner's determination that Hayner '557 is applicable prior art, Hayner '557 would have told one of ordinary skill at the time of this invention that the present invention does not work.

Most importantly, neither Liang '564 nor Hayner '557 understands or appreciates the value of "a continuous matrix of bitumen modified by addition of a polymer, the matrix being characterized as being substantially free of voids containing entrained air," which is precisely the required limitation of claim 1 of the present application. Neither Liang '564 nor Hayner '557 understands or appreciates the importance of minimizing this entrained air to providing a roof membrane that exhibits no blistering from entrained air voids after being treated under conditions intended to cause such entrained air to blister, which is precisely the object of the present invention.

From the above, the applicants conclude as follows:

1. Even if properly combined, the cited references do not teach all aspects of the claimed invention, particularly with regard to the substantial absence of entrained air voids and the lack of blistering of such voids;

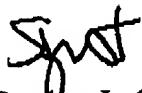
2. The cited references are not capable of being combined, in that Liang '564 teaches operation under a vacuum and Hayner '557 teaches operation at atmospheric pressure or higher, and they deal with different modifiers; and

3. Standing by itself, Hayner '557 teaches against the present invention, even though it apparently teaches the use of the same modifiers, because it teaches the blowing of air into the molten bitumen being modified, rather than teaching the use of vacuum to reduce entrained gases.

For at least these reasons, the Examiner's determination that the cited references render the present invention obvious is incorrect and should be withdrawn upon reconsideration.

The Examiner's Office Action having been carefully considered and all points addressed, prompt reconsideration and allowance of the claims is now respectfully requested.

Respectfully submitted,



Stephen L. Grant
Reg. No. 33,390
Hahn Loeser & Parks LLP
1225 W. Market St.
Akron, OH 44313
330-864-5550
Fax 330-864-7986
Email: slgrant@hahnlaw.com
Customer No. 021324